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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,726

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Hakan Fortell

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EXAMINER

OLSEN, LIN B

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,726	Applicant(s) FORTELL ET AL.	
	Examiner LIN B. OLSEN	Art Unit 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on January 19, 2007 was filed before the mailing date of the first action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

The claims are objected to because of the following informalities: There is a general imprecision of referring to one of a device previously recited as a plurality of devices (mechanical unit programs, path planners, etc) so as to create confusion as to the structural relationship of the components of claim.

Claims 5 and 6 are objected to because of the following informalities: In editing these claims to remove, "characterized in that" the addition of "wherein" was omitted. Appropriate correction is required.

Claim Rejections - 35 USC § 101 and 112

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **14-16** are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims **14-16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 provides for the use of a control system, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 15 provides for the use of a method but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 16 provides for the use of a computer program but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where

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it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-2, and 9-10 are rejected under 35 U.S.C. 101 because the claims fail to define a statutory process. There does not appear to be sufficient structural and functional interrelationships between the computer program and other claimed elements of a computer, processor or system which permit the computer program's functionality to be realized. For the claim to be statutory there is a requirement that there be a functional interrelationship among the data and the computing processes performed when utilizing the data. A process consisting solely of mathematical operation does not manipulate appropriate subject matter and thus cannot constitute a statutory process. While data used in the method is derived to control a physical entity - mechanical units, the method to be statutory, requires some useful, tangible, concrete result. The current claims appear abstract and do not appear to claim a tangible concrete result.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the way in which the plurality of mechanical units is interconnected to the system so as to be controlled by the system/method.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “i.e. when it has stopped moving” renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **1-2, 9-10, 12 and 14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No. 2003/0220715 to Kneifel II et al. (Kneifel). Kneifel is concerned with control system for facilitating coordination among a number of robot machines.

Regarding independent **claims 1, 9 and 12**, which are the system and method for using the system, and computer program product embodying the method, "A control system for controlling the movements of a plurality of mechanical units, the control system further comprises comprising: " – see Kneifel abstract where the system facilitates coordination of robotic machines (mechanical units).

"a program means comprising a plurality of mechanical unit programs, each comprising program instructions including movement instructions for at least one of said mechanical units," – See Kneifel Fig. 3, memory device 33 containing program storage for the robots and termed the instruction source. It would have been obvious to one of

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ordinary skill in the art at the time of the invention to organize the program storage as entities for controlling one robot controller for ease of debug and maintenance,

“a plurality of path planners, each path planner adapted to receive instructions from at least one of said mechanical unit programs and on basis thereof determine how the mechanical unit should move in order to be able to execute the movement instruction,” – See Kneifel Fig. 5, the detail of the robot controller 34, where a real-time planner 64 interprets the higher level instructions (Paragraph 32).

“wherein at least one of said path planners is adapted to receive instructions from at least two of said mechanical unit programs and on basis thereof determine how the mechanical units should move in order to synchronize their movements,” - in paragraph 32 of Kneifel, the robot controller 34 incorporates a motion planner 62 than can serve as an arbiter of which instructions from the possible instruction sources will be executed by the robot. “and switching means adapted to switch a mechanical unit program from one path planner to another, whereby the movements of the mechanical units are synchronized when their mechanical unit programs are connected to the same path planner and the movements of the mechanical units are independent when their mechanical unit programs are connected to different path planners.” – As shown in Kneifel Fig. 4B, the instruction source 32 includes an arbitrator 50 which sends one of the motion control commands 48 or 48' to the robot controller 36 depending on the arbitration. When the robot controller selected is the rightmost controller of Fig. 3, the robots “c” are synchronized.

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Regarding **claims 2 and 10**, which are dependent on claims 1 and 9 respectively, “wherein each mechanical unit program is connected to one of said path planners, and said switching means is adapted to upon command disconnect the mechanical unit program from the connected path planner and to connect the mechanical unit program to another path planner.” - As described in Kneifel paragraph 30, motion control commands can come from the central instruction source or the memory in the robot controller and the arbitrator 50 connects and disconnects the source based on attach/detach command.

Regarding **claim 14**, “Use of a control system according to claim 1 in a system comprising a plurality of mechanical units, namely robots and/or external axes, which are programmed to execute at least one task where at least two of said mechanical units move synchronously.” – This claim is to a method of using the system of claim 1. Although no steps are recited, the claim adds no new elements, so is rejected for the same reasons as claim 1.

Regarding **claim 15**, “Use of a method according to claim 9 in a system comprising a plurality of mechanical units, namely robots and/or external axes, which are programmed to execute at least one task where at least two of said mechanical units move synchronously.” - This claim is to a system that implements the method of claim 9. Although no steps are recited, the claim adds no new elements, so is rejected for the same reasons as claim 9.

Regarding **claim 16**, “Use of a computer program product according to claim 12 in a system comprising a plurality of mechanical units, namely robots and/or external axes, which are programmed to execute at least one task where at least two of said mechanical units move synchronously.” - This claim is to a computer program product that uses the product of claim 12. Although no steps are recited, the claim adds no new elements, so is rejected for the same reasons as claim 12.

Claims **3 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kneifel as applied to claims 1 and 9 above, and further in view of U.S. Patent No. 5,254,923 to Kanitani (Kanitani). Kanitani is concerned with synchronizing industrial robots.

Regarding **claims 3 and 11**, which are dependent on claims 1 and 9 respectively, further comprising:

“a central data storage means and wherein at least one mechanical unit is arranged to transmit data concerning its position and/or status to the central data storage means.” –Kneifel paragraph 28 indicates that a control program is able to detect the attached status of a robot, but does not specify how. Kanitani shows in Fig. 2 a shared memory C that holds status data that can be accessed by any module on the bus. It would have been obvious to one of ordinary skill in the art at the time of the invention to place use a shared memory to hold status information as taught by Kanitani

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to implement the known technique in Kneifel's device to implement the predictable result of shared status information.

Claims **4-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kneifel/Kanitani as applied to claims 3 and 11 above, and further in view of U.S. Patent No. 6,004,019 to Suita (Suita). Suita is concerned with an integrated control system for a work robot that uses shared memory.

Regarding **claims 4 and 5**, which are dependent on claim 3, "wherein said at least one mechanical unit is arranged to transmit position and/or status data to the central data storage means when it is stationary i.e. when it has stopped moving." (or in claim 5 – "while it is moving to a new location") – Kanitani shows status information such as moving time, but is not specific about what data is stored. Suita in Table 1, in col. 4 shows the data stored for each robot making up a work robot. The data includes position and whether there is a temporary stop. It would have been obvious to one of ordinary skill in the art at the time of the invention to store the values detailed by Suita in the memory of the Kneifel/Kanitani combination to fully know the state of the system.

Regarding **claim 6**, which is dependent on claim 4 "said position data comprises information concerning the displacement and/or rotation of said at least one mechanical unit's coordinate system." – Although none of Kneifel/Kanitani/Suita is specific about including the coordinate system displacement/rotation, since it would be needed to

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coordinate the various robots, it would have been obvious to one of ordinary skill in the art at the time of the invention to include that data under position data.

Regarding **claim 7**, which is dependent on claim 3, wherein the central data storage means is arranged so that data stored therein is accessible by an operator, a mechanical-unit program or the path planning means. – Suita shows the shared memory 6 on a common bus available to all the CPUs in the system; therefore it would be available to the two programs – Mechanical-unit program and path planning. Further the PLC computer on the bus has an operation unit 9 that functions as an operator control and can access the memory.

Regarding **claim 8**, which is dependent on claim 3, “wherein the central data storage means is arranged so that data stored therein is accessible via a network such as the Internet.” – As shown in Kneifel Fig. 3, the instruction source and robot controller are interconnected by the network. – Suita Fig. 1 shows a network computer 5 connected to the bus with the memory. The network computer connects to a network such as the Internet.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 6, 804,580 to Stoddard et al; U.S. Patent No. 7,010,390 to Graf et al.; U.S. Patent No. 7,069,112 to Graf; U.S. Patent Pub. No.

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2004/0030452 to Graf et al.; U.S. Patent Pub. No. 2009/0200254 to Krause and
European Patent EP 1 090 722 to Fanuc Ltd.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIN B. OLSEN whose telephone number is (571)272-9754. The examiner can normally be reached on Mon - Fri, 8:30 -5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lin B Olsen/
Examiner, Art Unit 3661

/Thomas G. Black/
Supervisory Patent Examiner, Art Unit 3661